

# Arsenii Ashukha

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e-mail: [ars.ashuha@gmail.com](mailto:ars.ashuha@gmail.com) tel: +79651782915

## EDUCATION

- PhD in Computer Science, **Centre of Deep Learning NRU HSE**, 2017 - Nov 2021 (expected)  
Topic: *Applications and understanding of variational inference in deep learning*, Advisor: Dmitry Vetrov
- MSc in Computer Science, **Moscow Institute of Physics and Technology**, 2017 (with distinction)  
Thesis: *Sparsification of DNNs probabilistic framework*, Advisors: Dmitry Vetrov and Alexey Dral
- MSc eq. in Computer Science & Machine Learning, **Yandex School of Data Analysis**, 2017
- BSc in Computer Science **Bauman Moscow State Technical University**, 2015  
Thesis: *Bigram anchor words topic modeling*, Advisor: Natalia Loukachevitch

## PROFESSIONAL EXPERIENCE

- **Research Scientist, Samsung AI Center** (2018 - Now):  
Currently, I'm working on practical experiment designs for uncertainty estimation. Previous topics I worked on include: a large-scale study of UE techniques and metrics, learning data-dependent priors over models' weights with generative models, learning data augmentation policy for test-time averaging. Since 2021 I'm helping to manage the lab as deputy of lab leader.
- **Research Scientist, Yandex Research** (2017 - 2018):  
I worked on a group-level sparsification and uncertainty estimation. The method was applied to accelerate the feature extraction process for image retrieval.
- **Research Intern, Centre of Deep Learning and Bayesian Methods NRU HSE** (2016 - 2017):  
I worked on sparsification of DNNs. This line of research led to Sparse Variational Dropout, the method that started a new class of sparsification methods that exploit modern advances of variational inference.
- **Intern, Yandex Music Deep Learning Group** (summer of 2016):  
I worked on feature extraction techniques for music data with convolutional neural networks. I also developed an evaluation of learned representations. The representations impacted the content-based recommendation system for music.
- **Machine Learning Engineer, Rambler&Co** (2013 - 2016):  
Worked on demographic classification and recommendation systems. My responsibility included improving the quality and performance of classifiers, automatic feature extraction algorithms, and recommendation algorithms. We used the following stack of technologies: Hadoop, Hive, Spark, XGboost, Vowpal Wabbit, gensim.

## REPRESENTATIVE PAPERS

- Arsenii Ashukha\*, Alexander Lyzhov\*, Dmitry Molchanov\*, Dmitry Vetrov  
Pitfalls of In-Domain Uncertainty Estimation and Ensembling in Deep Learning, ICLR (2020)  
[blog post](#) / [poster video \(5mins\)](#) / [code](#) / [arXiv](#) / [bibtex](#)
- Dmitry Molchanov\*, Arsenii Ashukha\*, Dmitry Vetrov  
Variational Dropout Sparsifies Deep Neural Networks, ICML (2017)  
[talk](#) / [arXiv](#) / [bibtex](#) / [code](#) [theano](#), [tf](#) by [GoogleAI](#), [colab](#) [pytorch](#)

See the full list at [scholar.google.com/citations?user=IU-kuP8AAAAJ](https://scholar.google.com/citations?user=IU-kuP8AAAAJ), \* is for an equal contribution.

## MISCELLANEOUS

- Reviewing:
  - Conferences:
    - International Conference on Machine Learning, ICML (2019, 2020 top-33% highest-scored reviewers)
    - Neural Information Processing Systems, NeurIPS 2019 (top-50% highest-scored reviewers)
    - International Conference on Learning Representations, ICLR (2020, 2021)
  - Workshops:
    - ICML Workshop on Invertible Neural Networks (2019, [invertibleworkshop.github.io](https://invertibleworkshop.github.io))
    - Bayesian Deep Learning Workshop (since 2017, [bayesiandeeplearning.org](https://bayesiandeeplearning.org))
- Thesis (co-)supervision:
  - Alexander Lyzhov (moved to Samsung AI Center)
    - Deep Neural Network Ensembles: Analysis and Approaches to Diversification (MSc, 2020)
  - Andrei Atanov (PhD candidate at EPFL)
    - Effective Learning of Deep Neural Networks Ensembles (BSc, 2018)
    - Learning Deep Models with Small Data (MSc, 2020)
  - Evgenii Nikishin (PhD candidate at Cornell)
    - Stability Improvement and Knowledge Transfer in Deep Reinforcement Learning (MSc, 2019)
- Teaching:
  - Supervisor of scientific seminars on machine learning at HSE and Yandex (since 2017)
  - TA at **Deep | Bayes** Summer School on Bayesian Deep Learning (since 2017), [deepbayes.ru](https://deepbayes.ru)
  - Lecturer, Moscow Institute of Physics and Technology: I was a lecturer and manager of the deep learning brunch of a faculty-wide machine learning course ([ml-mipt.github.io](https://ml-mipt.github.io)). Also, I taught deep learning and practical sessions on cutting-edge ML algorithms on a facultative course "Data Mining in Action" (<https://bit.ly/3eRLGYp>). The goal of this course is to make ML education available for everyone for free.
- Open-source contributions:
  - See <https://github.com/senya-ashukha>
  - Extremely simple implementations of ML algorithms that I made just for fun: [Density estimation using Real NVP](#), [Quantile Regression DQN](#), [Gradient boosting](#)
- Keywords: I'm fluent with Python which is my love, I use to code on C, Go, language is not a problem after all. I'm also fluent with common python libs such as NumPy, Matplotlib, scikit-learn, etc. My primary deep learning framework at the moment is PyTorch, which is my absolute love, prior to that I had a decent experience with Theano+Lagange and TensorFlow. I used to work with Hadoop, Hive, Spark.